CLAIMS

1. (Original) In a passive optical network that includes an optical line terminal (OLT) and a plurality of optical network units (ONUs), a method for registration of multiple entities belonging to a specific ONU comprising the steps of :

a) checking, by the OLT, if a registration request message received from the specific ONU belongs to a certain grant; and

b) based on said checking, deciding, by the OLT, to register an entity associated with the registration request as an entity of said specific ONU selected from the group consisting of a first entity and an additional entity.

2. (Original) The method of claim 1, wherein said certain grant is selected from the group consisting of a discovery grant and a normal grant.

3. (Original) The method of claim 2, wherein said step of deciding includes deciding to register said entity as said additional entity if said grant is a normal grant.

4. (Original) The method of claim 2, wherein said step of deciding includes deciding to register said entity as said first entity if said grant is a discovery grant.

5. (Original) The method of claim 4, further comprising a step of deleting all previously registered entities for said specific ONU.

6. (Original) In a passive optical network that includes an optical line terminal (OLT) and a plurality of optical network units (ONUs), a method for registration of multiple entities belonging to a specific ONU comprising the steps of :

a) checking, by the OLT, of a flags field residing inside a registration request message received from the specific ONU; and

b) based on said checking, deciding, by the OLT, to register an entity associated with the registration request as an entity of said specific ONU selected from the group consisting of a first entity and an additional entity.

7. (Original) The method of claim 6, wherein said step of checking includes checking if the flags field marks an additional registration.

8. (Original) The method of claim 7, wherein said mark of an additional registration includes a newly defined reserved value, and wherein said step of deciding includes concluding that said entity is said additional entity of said specific ONU.

9. (Original) The method of claim 6, wherein said step of deciding includes deciding that a flags field value is an old value, the method further comprising the step of deleting all previously registered entities for said specific ONU.

10. (Withdrawn) In a passive optical network that includes an optical line terminal (OLT) and a plurality of optical network units (ONUs), a method for grant optimization by the OLT comprising the steps of:

a) handling, by the OLT, of a current grant to a specific ONU, said current grant having a current grant content;

b) storing said current grant content in a current grant variable;

c) checking in a grant list, by the OLT, if an additional grant having an additional grant content belongs to said specific ONU; and

d) if said additional grant is found, coalescing said current grant content and said additional grant contents, whereby said coalescing removes the need to add additional optical overhead to said current grant content.

11. (Withdrawn) The method of claim 10, wherein said step of checking includes comparing, by said ONU, a current grant time of said current grant with a start grant time of said additional grant, and wherein said step of coalescing includes leaving a laser on, thereby saving on turn-off and a second turn-on of said laser.

12. (Withdrawn) The method of claim 10, further comprising repeating steps (c) and (d) until until said grant list is found empty.

13. (Withdrawn) The method of claim 12, further comprising the steps of adding optical overhead to said current grant variable, and transmitting, by the OLT, of said current grant variable and said optical overhead to said specific ONU.

14. (Withdrawn) In a passive optical network (PON) that includes an optical line terminal (OLT) and a plurality of optical network units (ONUs) of which at least one is a multiple entity ONU having a bridge, a method for packet data flow optimization comprising the steps of:

a) determining, by the multiple entity ONU, if a packet originates from the OLT or from an originating user port;

b) searching for a destination address of said packet;

c) if said destination address is not found, transmitting, by the multiple entity ONU, said packet solely to the OLT; and

d) if said destination address is found, transmitting, by the multiple entity ONU, said packet to a destination selected from the group consisting of a destination user port of said multiple entity ONU, other that said originating user port, and the combination of said OLT and all user ports except said originating user port;

whereby the method removes the need for a source address learning by the ONU when said packet is received from the OLT

15. (Withdrawn) The method of claim 14, wherein said step of transmitting said packet solely to the OLT is followed by the step of transmitting, by the OLT, of said packet to a user selected from the group of all user ports except said originating port and a particular user.

16. (Withdrawn) The method of claim 14, wherein said destination address found in said step of searching is a broadcast address, and wherein said step of transmitting said packet includes transmitting said packet to said OLT and all user ports except said originating user port.

17. (Withdrawn) In a passive optical network that includes an optical line terminal (OLT) and a plurality of optical network units (ONUs), a method for registration of multiple entities belonging to a specific ONU comprising the steps of:

a. providing each entity of the multiple entity ONU with a separate identifying media access control address; and

b. performing sequentially a standard registration process for each said entity using its separate identifying media access control address;

18. (Withdrawn) The method of claim 17, wherein said standard registration process is performed according to the IEEE 802.3 specification.